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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/762,360	01/23/2004	Yasuhiro Yamamoto	P24455	4924

7055 7590 04/09/2007

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EXAMINER	
EGAN, SCOTT T	
ART UNIT	**PAPER NUMBER**
2622	

SHORTENED STATUTORY PERIOD OF RESPONSE	NOTIFICATION DATE	DELIVERY MODE
3 MONTHS	04/09/2007	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Notice of this Office communication was sent electronically on the above-indicated "Notification Date" and has a shortened statutory period for reply of 3 MONTHS from 04/09/2007.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No.	Applicant(s)	
	10/762,360	YAMAMOTO, YASUHIRO	
	Examiner	Art Unit	
	Scott Egan	2622	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *23 January 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-4* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-4* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *23 January 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Information Disclosure Statement

2. The information disclosure statement (IDS) submitted on April 22, 2004 was considered by the examiner.

Specification

3. The disclosure is objected to because of the following informalities:

a. On page 1, line 21 "affect" should be changes to affects.

b. On page 10, line 15 G23=58.5 should be changed to coincide with the drawings, which show a value of 58.8.

Appropriate correction is required.

4. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 1-4 are rejected under 35 U.S.C. 102(b) as being anticipated by Chen et al. (US 2002/0047907).

Consider **claim 1**, Chen et al. explicitly teach:

An image processing device (image processor 11, figure 1) in which red (R), green (G), and blue (B) pixels, (R-pixels, G-pixels, and B-pixels) are regularly arranged in a matrix so that, based on image data from said R-, G-, and B-pixels, G-pixel data is obtained for said R-pixel or said B-pixel (figure 2 shows arrangement of pixels, [0047] explains that the G-data will be obtained), said image processing device comprising:

a first correlation value calculating processor (image processor 11) that, based on pixel data of related pixels which are positioned in the vertical and horizontal directions relative to said R-pixel or said B-pixel, each of which is an objective pixel (arrangement of pixels with objective pixel in bold can be seen in figure 2), obtains a first correlation value relating to said objective pixel by a calculation ([0052]: 1-6);

a second correlation value calculating processor (image processor 11) that obtains a second correlation value relating to four peripheral pixels which are positioned adjacent to the upper left, upper right, lower left, and lower right objective pixel ([0047]: 6-10); and

a pixel data calculating processor (image processor 11) that obtains vertical and horizontal correlations of pixel data of said objective pixel based on said first correlation value and said second correlation value , (comparison values found using equations 23

and 24 in paragraph [0072], and equations 37 and 38 in paragraph [0095], see also [0079]-[0083], describe how the direction of the interpolation is chosen based on the horizontal and vertical correlation values), said pixel data calculating processor obtaining the G-pixel data of said objective pixel, using pixel data of said G-pixel, and one of said R-pixel and said B-pixel positioned in a vertical direction of said objective pixel, when said vertical correlation is greater than said horizontal correlation (Figure 5, case 2), said pixel data calculating processor obtaining the G-pixel data of said objective pixel, using pixel data of said G-pixel, and one of said R-pixel and said B-pixel positioned in a horizontal direction of said objective pixel, when said horizontal correlation is greater than said vertical correlation (figure 5, case 8).

Consider **claim 2**, Chen et al. explicitly teach:

An image processing device according to claim 1, wherein said pixel data calculating processor obtains said vertical and horizontal correlations, based on a correlation coefficient obtained by multiplying different coefficients by said first correlation value and said second correlation value ([0072]-[0073] describes the use of weighting coefficients when determining the vertical and horizontal correlation values).

Consider **claim 3**, Chen et al. explicitly teach:

An image processing device according to claim 1, wherein said second correlation value is obtained based on first absolute values of the differences between G-pixel data of G-pixels adjacent to the right and left of each of said peripheral pixels, and second absolute values of the differences between G-pixel data of G-pixels adjacent to the upper and lower sides of each of said peripheral pixels (see comparison

value equations 37 and 40, [0095], see also case 5, [0123], figure 5, and equations 43 and 46, [0128]).

Consider **claim 4**, Chen et al. explicitly teach:

An image processing device according to claim 1, wherein said second correlation value is obtained based on the sum of third absolute values of the differences between G-pixel data of G-pixels adjacent to the right and left of said four peripheral pixels, and the sum of fourth absolute values of the differences between G-pixel data of G-pixels adjacent to the upper and lower sides of each of said four peripheral pixels (see comparison value equations 37 and 40, [0095], see also case 5, [0123], figure 5, and equations 43 and 46, [0128]).

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

a. Hamilton, Jr. et al. (US 6,697,107) teaches smoothing of green values using vertical and horizontal pixels as seen in figures 4, 5A-5C, and 6A-6C.

b. Nohda (US 6,295,087) teaches an image pickup apparatus with an interpolation function using all of the objective pixels surrounding neighbors, vertical horizontal and diagonal as seen in figure 5.

c. Wang (US 6,781,626) teaches color interpolation using arrangements seen in figures 4E and 4F, including pixels in the vertical, horizontal, and diagonal directions.

d. Takahashi (US 6,744,916) teaches a method for interpolating missing pixels using pixels a-I to determine the value of objective pixel x as seen in figure 2.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Scott Egan whose telephone number is (571) 270-1452. The examiner can normally be reached on Monday-Friday 8:00 a.m. - 5:00 p.m., EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ngoc-Yen Vu can be reached on (571) 272-7320. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

SE

NGOC-YEN VU
SUPERVISORY PATENT EXAMINER